

Copy of Allowed Claims
Hyl 12/22/03

Listing of Claims

The following listing of claims will replace all prior versions, and listings, of claims in the present application. Please note that claims 27, 30-32 and 39 are being canceled. Claims 20, 28, 29, 49 and 50 are being amended and claim 52 is being added.

1. (Withdrawn) A process for producing ethanol from organic materials comprising the steps of:
 - providing an aqueous solution containing organic materials;
 - contacting said aqueous solution with a gas comprising ozone, said ozone being present in an amount sufficient to oxidize and break down at least a portion of said organic materials into an oxidized medium;
 - contacting said oxidized medium with microorganisms, said microorganisms consuming said oxidized medium in a cellular process to produce ethanol as a byproduct of said process; and
 - collecting said ethanol.
2. (Withdrawn) A process as defined in claim 1, wherein said organic materials comprise a material selected from the group consisting of a lignocellulosic material, a proteinaceous material, a carbohydrate, a chitin, and mixtures thereof.
3. (Withdrawn) A process as defined in claim 1, wherein said organic materials comprise animal waste.
4. (Withdrawn) A process as defined in claim 1, wherein said aqueous solution comprises a waste water.
5. (Withdrawn) A process as defined in claim 1, further comprising the step of reducing the size of said organic materials.
6. (Withdrawn) A process as defined in claim 1, wherein said ozone is contacted with said aqueous solution at a concentration of at least 0.01 ppm.
7. (Withdrawn) A process as defined in claim 1, wherein said aqueous solution is contacted with said ozone by flowing said aqueous solution through a venturi and feeding said ozone into said venturi.
8. (Withdrawn) A process as defined in claim 1, further comprising the steps of placing solid waste materials containing said organic materials into a porous container and circulating water through said porous container in order to form said aqueous solution.

9. (Withdrawn) A process as defined in claim 1, wherein said aqueous solution is contained in a slurry that is fed through an auger, said ozone being fed to said auger.

10. (Withdrawn) A process as defined in claim 1, wherein a pH modifier is added to said aqueous solution in order to adjust the pH of said solution.

11. (Withdrawn) A process as defined in claim 1, further comprising the step of separating out any solid materials contained in said solution prior to contacting said solution with said microorganisms.

12. (Withdrawn) A process as defined in claim 1, wherein said ozonated aqueous solution is contacted with said microorganisms in a packed tower.

13. (Withdrawn) A process as defined in claim 1, further comprising the step of separating said produced ethanol from said aqueous solution, said ethanol being separated from said aqueous solution through distillation.

14. (Withdrawn) A process as defined in claim 1, wherein said aqueous solution is cooled during contact with said ozone.

15. (Withdrawn) A process as defined in claim 14, further comprising the step of heating said solution after said solution is cooled.

16. (Withdrawn) A process as defined in claim 1, further comprising the step of converting said ethanol to a hydrocarbon gas by contacting said ethanol with a second microorganism.

17. (Withdrawn) A process as defined in claim 1, wherein said cellular process comprises respiration or photosynthesis.

18. (Withdrawn) A process as defined in claim 1, wherein said cellular process comprises fermentation.

19. (Withdrawn) A process as defined in claim 1, wherein said microorganism comprises an organism selected from the group consisting of Zymomonas mobilis, Saccharomyces cerevisiae, and mixtures thereof.

20. (Currently Amended) A process for producing useful products from organic materials comprising the steps of:

providing an aqueous solution containing organic materials;

contacting said aqueous solution with a gas comprising ozone, said ozone being contacted with said aqueous solution at a concentration of at least 0.01 ppm., said

ozone being present in an amount sufficient to oxidize at least a portion of said organic materials into an oxidized medium;

contacting said ozonated aqueous solution with a material selected from the group consisting of an organism, an enzyme, and mixtures thereof for microorganism, thereby converting said oxidized medium into a metabolic product; said metabolic product comprising a hydrocarbon gas; and

collecting said product.

~~21.~~ (Withdrawn) A process as defined in claim 20 wherein said product comprises an alcohol.

22. (Withdrawn) A process as defined in claim 20, wherein said product comprises organic acid.

23. (Withdrawn) A process as defined in claim 20, wherein said product comprises a vitamin.

2 ~~24.~~ (Original) A process as defined in claim 20, wherein said aqueous solution is contacted with said ozone by flowing said aqueous solution through a venturi and feeding said ozone into said venturi.

25. (Withdrawn) A process as defined in claim 20, wherein said ozonated aqueous solution is contacted with a plant and wherein said metabolic product comprises a pigment.

26. (Withdrawn) A process as defined in claim 25, wherein said plant comprises red algae.

27. (Cancelled)

3 ~~28.~~ (Currently Amended) A process as defined in claim ~~27~~ 20, wherein said hydrocarbon gas comprises methane.

4 ~~29.~~ (Currently Amended) A process as defined in claim ~~27~~ 20, wherein said bacteria microorganism comprises a bacteria chosen from the group of methanogenic bacteria and wherein said hydrocarbon gas comprises methane.

30. (Cancelled)

31. (Cancelled)

32. (Cancelled)

5 ~~33.~~ (Original) A process as defined in claim ~~29~~ 20, wherein said organic materials comprise food industry waste.

~~34~~ (Original) A process as defined in claim ~~20~~¹, wherein said organic materials comprise animal waste.

~~35~~ (Original) A process as defined in claim ~~20~~¹, wherein said organic materials comprise paper industry waste.

~~36~~ (Original) A process as defined in claim ~~20~~¹, wherein said organic materials comprise petroleum refining waste.

~~37~~ (Original) A process as defined in claim ~~20~~¹, wherein said organic materials comprise tire waste.

~~38~~ (Original) A process as defined in claim ~~20~~¹, wherein said organic materials comprise municipal solid waste.

39. (Canceled)

40. (Withdrawn) A process as defined in claim 20, wherein said product comprises a beta glucan.

41. (Withdrawn) A process as defined in claim 20, wherein said product comprises polyhydroxybutyrate, polyhydroxyvalerate, or mixtures thereof.

42. (Withdrawn) A process as defined in claim 20, further comprising the step of feeding said ozonated aqueous solution to a plant system.

43. (Withdrawn) A process as defined in claim 42, wherein said aqueous solution is fed to said plant system after said product is separated from the aqueous solution.

~~44~~ (Original) A process for producing methane from waste materials comprising of steps of:

providing an aqueous solution containing organic compounds;

contacting said aqueous solution with a gas comprising ozone, said ozone being present in an amount sufficient to convert at least a portion of said organic compounds into an oxidized medium;

contacting said ozonated aqueous solution with microorganisms, said microorganisms converting said oxidized medium into methane; and

collecting said methane.

~~45~~ (Original) A process as defined in claim ~~44~~¹¹, wherein said aqueous solution is contacted with said ozone by flowing said aqueous solution through a venturi and feeding said ozone into said venturi.

¹³
~~46~~ (Original) A process as defined in claim ~~44~~¹², further comprising the steps of:
monitoring the amount of metabolizable substrates in said aqueous solution
during ozonation; and

ozonating said aqueous solution until the amount of said metabolizable
substrates detected begins to decrease.

¹⁴
~~47~~ (Original) A process as defined in claim ~~44~~¹¹, further comprising the steps of:
calculating a maximum amount of metabolizable substrates that may be
produced during ozonation of said aqueous solution based upon the amount and type of
organic compounds contained in said solid waste materials; and

contacting said aqueous solution with ozone in an amount sufficient to
produce at least said calculated maximum amount. ¹³

¹⁵
~~48~~ (Original) A process as defined in claim ~~48~~, wherein said metabolizable
substrates comprise sugars.

~~49. (Currently Amended) A process for producing a growth medium for organisms
useful product from waste materials comprising the steps of:~~

~~providing an aqueous solution containing organic materials;~~

~~contacting said aqueous solution with a gas comprising ozone, said ozone
being present in an amount sufficient to oxidize and break down at least a portion of said
organic materials into an oxidized medium;~~

~~drying and collecting said oxidized medium for use as a growth medium.~~

~~50. (Original) A process as defined in claim 49, wherein said oxidized medium
comprises a fertilizer further comprising the step of feeding the dried and oxidized medium
to a plant.~~

~~51. (Original) A process as defined in claim 49, further comprising the step of
removing inorganic solid materials from said aqueous solution prior to collecting said
oxidized medium.~~

~~52. (New) A process as defined in claim 49, further comprising the step of feeding
the dried and oxidized medium to a microorganism.~~